EPA'S PROPOSAL TO UPDATE THE AIR QUALITY STANDARDS FOR GROUND-LEVEL OZONE: ADDITIONAL INFORMATION FOR STATES REGARDING BACKGROUND OZONE

Background ozone

EPA has a long history of working with states as they develop State Implementation Plans (SIPs) to reduce emissions of ozone precursors within individual jurisdictions. The agency will continue these collaborative efforts for any revised ozone National Ambient Air Quality Standards (NAAQS), including working with stakeholders to identify implementation solutions for treatment of ozone formed outside an area's jurisdiction.

Referred to as U.S. background (USB) ozone, this ozone is defined as the ozone that would exist in the absence of any manmade emissions inside the United States. This background ozone can come from natural processes, such as stratospheric intrusions or wildfires; and ozone resulting from international pollution sources. The Clean Air Act provides mechanisms to help states address background ozone as they develop and implement clean air plans.

It is not possible to project the exact nature of future implementation challenges associated with background ozone. However, based on analyses EPA conducted for the staff Policy Assessment for review of the NAAQS, on most days and at most U.S. locations, the background influence on observed ozone concentrations is expected to be much lower than the NAAQS levels that EPA proposed on November 25, 2014. The areas most likely to require careful consideration of the significance of background sources are higher-elevation, rural locations in the western U.S.

The remainder of this document describes Clean Air Act mechanisms that can be used to address background ozone and provides a characterization of background ozone levels across the U.S.

Clean Air Act mechanisms related to background ozone

The Clean Air Act (CAA) provides three mechanisms that air agencies can use to address exceedances of an ozone standard that potentially are caused by certain components of background ozone.

1. *Exceptional events* - Under specific circumstances that constitute an "exceptional event," (CAA section 319) a state can request and EPA can agree to exclude data associated with event-driven exceedances of a NAAQS. The exclusion of exceptional event-driven data could help some areas avoid an unintended designation as a nonattainment area.

   EPA anticipates proposing revisions to its 2007 Exceptional Events Rule in mid-2015, and taking final action in mid-2016, to simplify the process for making exceptional events demonstrations. The agency also is developing guidance to address Exceptional Events Rule criteria for wildfires that could affect ozone concentrations. EPA anticipates that both the final exceptional events rule and the wildfire/ozone-related guidance would be available before the date by which states, and any tribes that wish to do so, would have to make area designation recommendations for any potential revised ozone standards.

2. *International transport* - The CAA (section 179B) allows EPA to approve state-submitted attainment *demonstrations* that demonstrate the area would have met the ozone NAAQS by the attainment date if not for international emissions contributing to the area. Such an approval could help eligible areas avoid adopting more than reasonably available control measures.

EPA is actively identifying opportunities to reduce long-range transport of ozone and its precursors. This includes participation in the Convention on Long-Range Transboundary Air Pollution and working with air quality officials in Canada, Mexico, China and other countries to improve their air quality management capabilities and support ozone mitigation efforts. In addition, global efforts to reduce methane, such as the Climate and Clean Air Coalition and the Global Methane Initiative, will also help reduce global background ozone.

3. *Rural transport areas* - The CAA (section 182(h)) also allows EPA to identify certain ozone nonattainment areas as rural transport areas if the area does not contain emissions sources that significantly contribute to ozone concentrations in the area, or in other areas. This identification may help eligible areas avoid more stringent nonattainment requirements.

An area also may be affected by ozone formed from domestic manmade sources outside its jurisdiction. Two sections for the CAA can be used to help states address such cross-state ozone impacts:

1. Section 110(a)(2)(D), commonly referred to as the "good neighbor" provision, requires each state to prohibit transported emissions that significantly contribute to nonattainment, or interfere with maintenance, in a downwind state; and

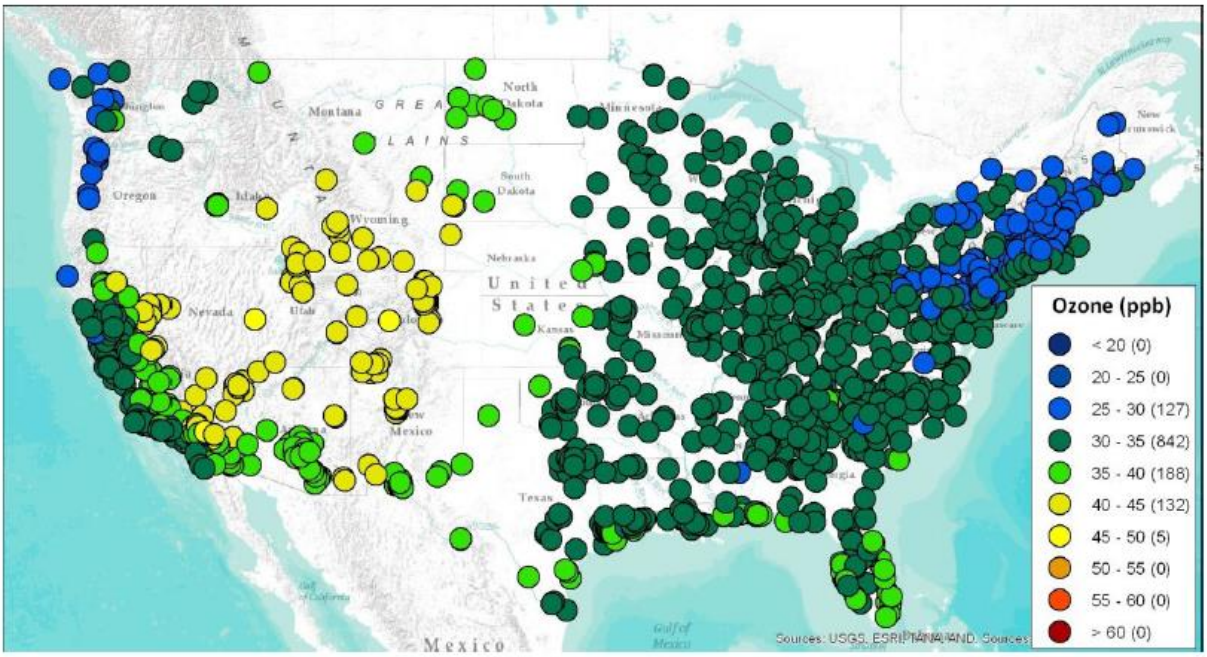
2. Section 126 allows downwind states to petition EPA to take action against a major stationary source, or group of stationary sources, that significantly contribute to nonattainment in the downwind state(s).

Characterization of background ozone levels across the U.S.

As summarized in EPA's Integrated Science Assessment (ISA) for ozone, ozone levels are influenced by sources other than local manmade emissions of ozone precursors. The magnitude of this "background" influence can vary from day-to-day and location-to-location.

In the Policy Assessment (PA) for the review of the ozone standards, EPA estimated the magnitude and relative influence of present-day USB ozone using air quality model simulations designed to isolate the impact of natural sources and manmade emissions originating outside of the U.S.

The EPA analyses which are consistent with other technical assessments in the existing peer-reviewed literature, concluded that seasonal mean USB levels range from 25-50 ppb across the U.S., with the highest background influence at locations in the intermountain western U.S. Thus, on most days and at most U.S. locations, the background influence on observed ozone is expected to be much lower than the range of NAAQS levels (65 to 70 parts per billion) that have been proposed.



Model estimates of average U.S. background (USB) levels at monitoring locations across the U.S. in 2007

Further, the EPA analyses described in the PA concluded that days with higher ozone levels generally have smaller fractional contributions from background than low ozone days. The following table indicates that the average fractional U.S. background influence on high ozone days ranges between 30-55% across 12 major U.S. urban areas. This indicates that domestic manmade emission sources are a substantial, and generally the dominant contributor, to the majority of U.S. ozone exceedances.

	Atlanta	Baltimore	Boston	Cleveland	Denver	Detroit
Fractional contribution from U.S. background sources on days in which 8-hour ozone exceeded 60 ppb	34%	31%	35%	35%	55%	35%
	Houston	**Los Angeles**	**New York City**	**Philadelphia**	**Sacramento**	**St. Louis**
	40%	43%	32%	31%	47%	36%

However, the EPA modeling analyses also suggest that, while the majority of modeled ozone exceedances have domestic manmade emissions as their primary cause, there can be relatively infrequent situations in which ozone levels approach or exceed the proposed NAAQS levels (i.e., 65-70 ppb) in large part due to background sources. In some cases, natural events (e.g., stratospheric intrusions of ozone, wildfire ozone plumes) contribute to these elevated concentrations, while in other cases, transport of manmade ozone from sources outside the U.S. contributes to the elevated concentrations. States can use certain CAA mechanisms, as discussed above, to account for these situations as they develop their clean air plans.

Finally, it should be recognized that climate change, if not addressed through the reduction of greenhouse gases and other climate-forcing pollutants, may increase the future contribution of certain components of background ozone (e.g., wildfires, fewer days with precipitation, and additional lightning strikes), further complicating the development of effective local ozone attainment strategies.